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Bruce K. Wachtmann

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EXAMINER

PIZARRO CRESPO, MARCOS D

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BRUCE K. WACHTMANN

Appeal 2009-009373
Application 10/670,673
Technology Center 2800

Before MARC S. HOFF, CARLA M. KRIVAK, and
THOMAS S. HAHN, *Administrative Patent Judges*.

KRIVAK, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellant appeals under 35 U.S.C. § 134(a) from a final rejection of claims 1, 3-5, 7, 8, and 15-19. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF THE CASE

Appellant's claimed invention is a method for forming a surface micro-machined microelectromechanical system (MEMS) by applying an insulator to a substrate and then depositing a conductive path on the insulator. The "insulator electrically isolates the conductive path from the substrate" and the MEMS device does not form a semiconductor junction between the substrate and the conductive path. (Spec. 3:2-9)

Independent claim 1, reproduced below, is representative of the subject matter on appeal.

1. A method of forming a surface micromachined MEMS device, the method comprising:

providing a substrate;

applying an oxide on the substrate;

depositing a conductive path directly on the oxide, the conductive path being capable of transmitting an electronic signal between two points on the MEMS device, the oxide spacing the conductive path from the substrate, the MEMS device being free of semiconductor junctions formed by the substrate and the conductive path,

forming circuitry and structure, the circuitry and structure being the two points; and

connecting the conductive path between the circuitry and the structure.

REFERENCES

Montague
Lee

US 5,798,283
US 6,160,314

Aug. 25, 1998
Dec. 12, 2000

Kim
Fladre

US 6,500,763 B2
US 2004/0152272 A1

Dec. 31, 2002
Aug. 5, 2004

The Examiner rejected claims 1, 3-5, 7, 8, and 15-18 under 35 U.S.C. § 103(a) based upon the teachings of Montague, Kim, and Lee.

The Examiner rejected claim 19 under 35 U.S.C. § 103(a) based upon the teachings of Montague, Kim, Lee, and Fladre.

Appellant contends Montague's nitride layer cannot be replaced with an oxide layer as taught by Kim and Lee as doing so "will cause Montague's device not to function properly as a MEMS device" (App. Br. 9; Reply Br. 11; Supp. Reply Br. 2). That is, in replacing Montague's silicon nitride layer with an oxide layer, etchant material used to dissolve a sacrificial layer will also dissolve the oxide if used in an insulating layer (Reply Br. 5; Supp. Reply Br. 2).

The Examiner finds Appellant's arguments are based on the premise the oxide of Kim and Lee is the same oxide as the sacrificial layers of Montague. This is incorrect, in that Montague's sacrificial layers are formed of silicon oxide or silicate glasses. Further, Kim's aluminum oxide layer has an etching selectivity of approximately 5 with respect to silicon dioxide and thus, the sacrificial layers of Montague will etch five times faster than the oxide layer of Kim and Montague. (Supp. Ans. 2). Therefore, the Examiner finds, the etching material used to dissolve the sacrificial layers of Montague will not dissolve the oxide material of Kim and Lee, as alleged by Appellant (Supp. Ans. 3). We disagree.

Appellant has shown the Examiner erred. As Appellant asserts, in Montague, which uses a wet etch process, "evaporated aluminum oxide dissolves at a faster rate than Montague's silicon dioxide sacrificial layers 30

and 32" (Supp. Reply Br. 2; Exhibit). Therefore, if aluminum oxide is used instead of Montague's silicon dioxide in Montague's insulating layer 20, the insulating layer will also dissolve, making Montague's device non-functional (Supp. Reply Br. 3).

DECISION

The Examiner's decision rejecting claims 1, 3-5, 7, 8, and 15-19 is reversed.

REVERSED

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